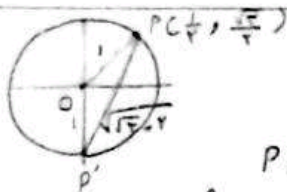


$$\frac{\frac{\sqrt{3}}{4}a - \frac{\sqrt{3}}{4}b}{-\frac{1}{4}a + \frac{1}{4}b} = -\frac{\sqrt{3}}{1} \rightarrow \frac{\frac{a}{4} - \frac{b}{4}}{\frac{b}{4} - \frac{a}{4}} = \frac{1}{\sqrt{3}} \rightarrow \frac{a}{b} = \frac{b}{a} = \frac{b}{\sqrt{3}b} = \frac{1}{\sqrt{3}}$$

$$\rightarrow \frac{\sqrt{3}a}{\sqrt{3}} = \frac{b}{\sqrt{3}} \rightarrow \sqrt{3}a = b$$

$$\frac{b}{a} = \sqrt{3}$$

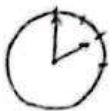


$$P = 60^\circ$$

$$P' = 270^\circ$$

$$PP' = \sqrt{\left(\frac{1}{4} - 0\right)^2 + \left(\frac{\sqrt{3}}{4} + 1\right)^2} = \sqrt{\frac{1}{16} + \sqrt{3} + \frac{3}{4}} = \sqrt{\sqrt{3} + 1}$$

$$(0, -1) \quad \text{محیط } P \hat{O} P' = 2 + \sqrt{\sqrt{3} + 1}$$



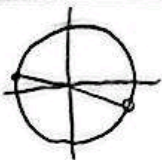
در یک عقربه ساعت شمار بر حسب درج، نصف حرکت دقیقه شمار بررسی دقیقه است.

$$\frac{\pi}{9} = \frac{x}{180} \rightarrow x = 20^\circ \rightarrow \text{دقیقه شمار} = 40 \text{ min}$$

$$\boxed{3:40'} \leftarrow \text{ساعت}$$

$$x^\circ = \left| \frac{11}{4}M - 30H \right| \rightarrow y_0 = \left| \frac{11}{4}M - 30 \times 3 \right|$$

$$\left| \frac{11}{4}M - 90 \right| = y_0 \quad \begin{cases} \frac{11}{4}M - 90 = y_0 \rightarrow M = y_0' & \text{بعد از } 3 \rightarrow \boxed{3: y_0'} \\ \frac{11}{4}M - 90 = -y_0 \rightarrow M = \frac{140}{11} & \text{قبل از } 3 \end{cases}$$



$$-\frac{\pi}{4} < x \leq \frac{\omega\pi}{4}$$

$$-\frac{1}{4} < \sin x \leq 1 \rightarrow -\frac{1}{4} < \frac{m-2}{\omega} \leq 1 \rightarrow -\frac{\omega}{4} < m-2 \leq \omega$$

$$\rightarrow \boxed{\frac{1}{4} < m \leq 1}$$

$$\frac{\sin(90^\circ + 12^\circ) + k \cos(90^\circ - 12^\circ)}{\cos(180^\circ - 12^\circ) + Y \sin(180^\circ + 12^\circ)} = \frac{\cos 12^\circ - k \sin 12^\circ}{-\cos 12^\circ - Y \sin 12^\circ}$$

$$\xrightarrow{\div \cos 12^\circ} \frac{1 - k \tan 12^\circ}{-1 - Y \tan 12^\circ} = \frac{1 - \frac{k}{Y}}{-1 - Y(\frac{1}{Y})} = \frac{1 - \frac{k}{Y}}{-\frac{Y}{Y}} = Y \rightarrow 1 - \frac{k}{Y} = -\frac{Y}{Y} \rightarrow \frac{1}{Y} = \frac{k}{Y} \rightarrow k = YY$$

6

$$\frac{1 - \cos x}{1 + \cos x} = Y \rightarrow 1 - \cos x = Y + Y \cos x \rightarrow -\frac{1}{Y} = \cos x$$

$$\cot x = -\frac{1}{Y\sqrt{Y}}$$

$$\tan x = -\frac{1}{Y\sqrt{Y}}$$

$$\sin^2 x + \cos^2 x = 1 \rightarrow \sin^2 x + \frac{1}{Y} = 1 \rightarrow \sin x = \frac{Y\sqrt{Y}}{Y}$$

$$\frac{\tan(\frac{\pi}{Y} - x) - \cot(\pi - x)}{\cot(\frac{\pi}{Y} - x) + Y \tan(\pi - x)} = \frac{\cot x + \cot x}{\tan x - Y \tan x} = \frac{Y \cot x}{- \tan x} = -Y \frac{\frac{1}{Y\sqrt{Y}}}{-\frac{1}{Y\sqrt{Y}}} = -Y \times (-\frac{1}{Y}) = \frac{1}{Y}$$

7

$$\frac{10\Lambda}{1\Lambda} = \frac{x}{r} \rightarrow x = \frac{Y}{\Delta} r$$

$$aR = L$$

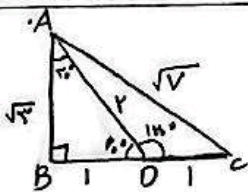
$$L_A = \frac{Y}{\Delta} r \times R_A$$

$$L_B = \frac{9r}{10} \times R_B$$

$$\frac{Y}{\Delta} r \times R_A = \frac{9}{10} r \times R_B \rightarrow R_A = \frac{Y}{Y} R_B$$

$$\frac{A_A}{A_B} = \left(\frac{R_A}{R_B}\right)^2 = \left(\frac{Y}{Y}\right)^2 = \frac{Y}{9}$$

8

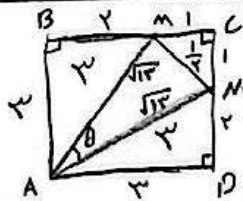


$$S_{ABD} = \frac{\sqrt{Y}}{Y} \rightarrow S_{ADC} = \frac{\sqrt{Y}}{Y} \rightarrow AD \rightarrow \sim L$$

$$AC^2 = AB^2 + BC^2 \rightarrow AC^2 = Y + Y = 2Y \rightarrow AC = \sqrt{2Y}$$

$$\sin \theta = Y \sin C \cos C = Y \times \frac{\sqrt{Y}}{\sqrt{2Y}} \times \frac{Y}{\sqrt{2Y}} = \frac{Y\sqrt{Y}}{2Y}$$

9



$$S_{ABCD} = Y$$

$$S_{ABM} = Y$$

$$S_{ADN} = Y$$

$$S_{MCN} = \frac{1}{Y}$$

$$S_{MAN} = \frac{\Delta}{Y} = \frac{1}{Y} \times \sqrt{Y} \times \sqrt{Y} \times \sin \theta \rightarrow \sin \theta = \frac{\Delta}{Y}$$